#5
DT

PATENT
Docket No.: **176/60792 (6-11415-868)** 01-31-01

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	:	Mahin D. Maines	Examiner: Unknown
Serial No.	:	09/606,129	Art Unit: Unknown
Filed	:	June 28, 2000	
For	:	BILIVERDIN REDUCTASE FRAGMENTS AND VARIANTS, AND METHODS OF USING BILIVERDIN REDUCTASE AND SUCH FRAGMENTS AND VARIANTS	

SUBMISSION OF REVISED SEQUENCE LISTING AND STATEMENT IN ACCORDANCE WITH 37 C.F.R. § 1.821(g)

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

In response to the Notice to File Missing Parts, applicant hereby submits a revised Sequence Listing (21 pages) on paper and on a computer readable 3.5" diskette. The revised sequence listing differs from the originally filed sequence listing by including data for the present application and revising the description of SEQ. ID. Nos. 7 and 8 to indicate that X at each position can be any amino acid. For each of SEQ. ID. Nos. 6-17, the listed sequences are motifs which generally define the sequences of various hGVR domains; hence, an X at each position can be any amino acid. In the originally filed sequence listing, typographical errors resulted in the incomplete description of SEQ. ID. Nos. 7 and 8. The revised Sequence Listing corrects these errors.

Pursuant to 37 CFR § 1.821(g), applicant submits that the information on the paper copy and the computer readable diskette are the same. This submission contains no new matter.

Respectfully submitted,

Dated: December 18, 2000

Edwin V. Merkel
Registration No. 40,087

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R431370.1

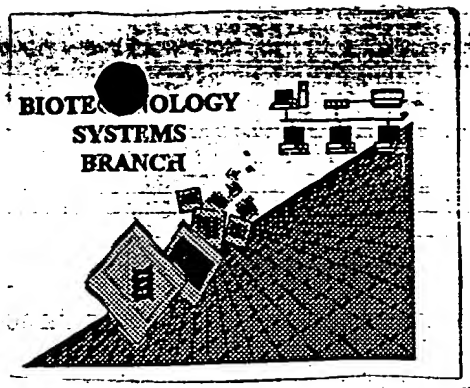
Certificate of Mailing - 37 CFR 1.8 (a)

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231. on the date below.

12/18/00
Date

Wendy L. Harrold

0200



RAW SEQUENCE LISTING ERROR REPORT

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) detected errors when processing the following computer readable form:

Application Serial Number: 09/606,129

Source: OIPE

Date Processed by STIC: 7/12/2000

THE ATTACHED PRINTOUT EXPLAINS DETECTED ERRORS.

PLEASE FORWARD THIS INFORMATION TO THE APPLICANT BY EITHER:

1) **INCLUDING A COPY OF THIS PRINTOUT IN YOUR NEXT COMMUNICATION TO THE APPLICANT, WITH A NOTICE TO COMPLY or,**

2) **TELEPHONING APPLICANT AND FAXING A COPY OF THIS PRINTOUT, WITH A NOTICE TO COMPLY**

FOR FURTHER INFORMATION, PLEASE TELEPHONE MARK SPENCER, 703-308-4212.

TO REDUCE ERRORED SEQUENCE LISTINGS, PLEASE USE THE **CHECKER VERSION 3.0 PROGRAM**, ACCESSIBLE THROUGH THE U.S. PATENT AND TRADEMARK OFFICE WEBSITE. SEE BELOW:

Checker Version 3.0

The Checker Version 3.0 application is a state-of the-art Windows based software program employing a logical and intuitive user-interface to check whether a sequence listing is in compliance with format and content rules. Checker Version 3.0 works for sequence listings generated for the original version of 37 CFR §§1.821 – 1.825 effective October 1, 1990 (old rules) and the revised version (new rules) effective July 1, 1998 as well as World Intellectual Property Organization (WIPO) Standard ST.25.
Checker Version 3.0 replaces the previous DOS-based version of Checker, and is Y2K-compliant. Checker allows public users to check sequence listings in Computer Readable form (CRF) before submitting them to the United States Patent and Trademark Office (USPTO). Use of Checker prior to filing the sequence listing is expected to result in fewer errored sequence listings, thus saving time and money.

Checker Version 3.0 can be down loaded from the USPTO website at the following address:

http://www.uspto.gov/web/offices/pac/checker

OIPE

RAW SEQUENCE LISTING DATE: 07/12/2000
PATENT APPLICATION: US/09/606,129 TIME: 10:58:14

Input Set : A:\U607921.app
Output Set: N:\CRF3\07122000\I606129.raw

```
      3 <110> APPLICANT: Maines, Mahin D.
      5 <120> TITLE OF INVENTION: BILIVERDIN REDUCTASE FRAGMENTS AND VARIANTS, AND
      6       METHODS OF USING BILIVERDIN REDUCTASE AND SUCH
      7       FRAGMENTS AND VARIANTS
      9 <130> FILE REFERENCE: 176/60792
C--> 11 <140> CURRENT APPLICATION NUMBER: US/09/606,129
C--> 12 <141> CURRENT FILING DATE: 2000-06-28
     14 <150> PRIOR APPLICATION NUMBER: 60/141,309
     15 <151> PRIOR FILING DATE: 1999-06-28
     17 <150> PRIOR APPLICATION NUMBER: 60/163,223
     18 <151> PRIOR FILING DATE: 1999-11-03
     20 <160> NUMBER OF SEQ ID NOS: 37
     22 <170> SOFTWARE: PatentIn Ver. 2.1
     24 <210> SEQ ID NO: 1
     25 <211> LENGTH: 296
     26 <212> TYPE: PRT
     27 <213> ORGANISM: Homo sapiens
     29 <400> SEQUENCE: 1
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     31   1               5                  10                  15
     33 Gly Arg Ala Gly Ser Val Arg Met Arg Asp Leu Arg Asn Pro His Pro
     34               20                  25                  30
     36 Ser Ser Ala Phe Leu Asn Leu Ile Gly Phe Val Ser Arg Arg Glu Leu
     37           35                  40                  45
     39 Gly Ser Ile Asp Gly Val Gln Gln Ile Ser Leu Glu Asp Ala Leu Ser
     40       50                  55                  60
     42 Ser Gln Glu Val Glu Val Ala Tyr Ile Cys Ser Glu Ser Ser Ser His
     43  65                  70                  75                  80
     45 Glu Asp Tyr Ile Arg Gln Phe Leu Asn Ala Gly Lys His Val Leu Val
     46                  85                  90                  95
     48 Glu Tyr Pro Met Thr Leu Ser Leu Ala Ala Ala Gln Glu Leu Trp Glu
     49              100                 105                 110
     51 Leu Ala Glu Gln Lys Gly Lys Val Leu His Glu Glu His Val Glu Leu
     52          115                 120                 125
     54 Leu Met Glu Glu Phe Ala Phe Leu Lys Lys Glu Val Val Gly Lys Asp
     55      130                 135                 140
     57 Leu Leu Lys Gly Ser Leu Leu Phe Thr Ser Asp Pro Leu Glu Glu Asp
     58 145                 150                 155                 160
     60 Arg Phe Gly Phe Pro Ala Phe Ser Gly Ile Ser Arg Leu Thr Trp Leu
     61                  165                 170                 175
     63 Val Ser Leu Phe Gly Glu Leu Ser Leu Val Ser Ala Thr Leu Glu Glu
     64              180                 185                 190
     66 Arg Lys Glu Asp Gln Tyr Met Lys Met Thr Val Cys Leu Glu Thr Glu
     67          195                 200                 205
     69 Lys Lys Ser Pro Leu Ser Trp Ile Glu Glu Lys Gly Pro Gly Leu Lys
     70      210                 215                 220
     72 Arg Asn Arg Tyr Leu Ser Phe His Phe Lys Ser Gly Ser Leu Glu Asn
```

see ?

Does Not Comply
Corrected Diskette Needed

RAW SEQUENCE LISTING DATE: 07/12/2000
PATENT APPLICATION: US/09/606,129 TIME: 10:58:14

Input Set : A:\U607921.app
Output Set: N:\CRF3\07122000\I606129.raw

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225                 230                 235                 240
Val Pro Asn Val Gly Val Asn Lys Asn Ile Phe Leu Lys Asp Gln Asn
                245                 250                 255
Ile Phe Val Gln Lys Leu Leu Gly Gln Phe Ser Glu Lys Glu Leu Ala
            260                 265                 270
Ala Glu Lys Lys Arg Ile Leu His Cys Leu Gly Leu Ala Glu Glu Ile
        275                 280                 285
Gln Lys Tyr Cys Cys Ser Arg Lys
    290                 295
```

<210> SEQ ID NO: 2
<211> LENGTH: 1070
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens
<400> SEQUENCE: 2

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atgaatgcag agcccgagag gaagtttggc gtggtggtgg ttggtgttgg ccgagccggc 120
tccgtgcgga tgagggactt gcggaatcca cacccttcct cagcgttcct gaacctgatt 180
ggcttcgtgt cgagaaggga gctcgggagc attgatggag tccagcagat ttctttggag 240
gatgctcttt ccagccaaga ggtggaggtc gcctatatct gcagtgagag ctccagccat 300
gaggactaca tcaggcagtt ccttaatgct ggcaagcacg tccttgtgga ataccccatg 360
acactgtcat tggcggccgc tcaggaactg tgggagctgg ctgagcagaa aggaaaagtc 420
ttgcacgagg agcatgttga actcttgatg gaggaattcg ctttcctgaa aaaagaagtg 480
gtggggaaag acctgctgaa agggtcgctc ctcttcacat ctgacccgtt ggaagaagac 540
cggtttggct tccctgcatt cagcggcatc tctcgactga cctggctggt ctccctcttt 600
ggggagcttt ctcttgtgtc tgccactttg gaagagcgaa aggaagatca gtatatgaaa 660
atgacagtgt gtctggagac agagaagaaa agtccactgt catggattga agaaaaagga 720
cctggtctaa aacgaaacag atatttaagc ttccatttca agtctgggtc cttggagaat 780
gtgccaaatg taggagtgaa taagaacata tttctgaaag atcaaaatat atttgtccag 840
aaactcttgg gccagttctc tgagaaggaa ctggctgctg aaaagaaacg catcctgcac 900
tgcctggggc ttgcagaaga aatccagaaa tattgctgtt caaggaagta agaggaggag 960
gtgatgtagc acttccaaga tggcaccagc atttggttct tctcaagagt tgaccattat 1020
ctctattctt aaaattaaac atgttgggga aacaaaaaaa aaaaaaaaaa             1070
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<210> SEQ ID NO: 3
<211> LENGTH: 296
<212> TYPE: PRT
<213> ORGANISM: Homo sapiens
<400> SEQUENCE: 3

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  1               5                  10                  15
Gly Arg Ala Gly Ser Val Arg Met Arg Asp Leu Arg Asn Pro His Pro
             20                  25                  30
Ser Ser Ala Phe Leu Asn Leu Ile Gly Phe Val Ser Arg Arg Glu Leu
         35                  40                  45
Gly Ser Ile Asp Gly Val Gln Gln Ile Ser Leu Glu Asp Ala Leu Ser
     50                  55                  60
Ser Gln Glu Val Glu Val Ala Tyr Ile Cys Ser Glu Ser Ser Ser His
 65                  70                  75                  80
Glu Asp Tyr Ile Arg Gln Phe Leu Asn Ala Gly Lys His Val Leu Val
                 85                  90                  95
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RAW SEQUENCE LISTING DATE: 07/12/2000
PATENT APPLICATION: US/09/606,129 TIME: 10:58:14

Input Set : A:\U607921.app
Output Set: N:\CRF3\07122000\I606129.raw

```
138 Glu Tyr Pro Met Thr Leu Ser Leu Ala Ala Ala Gln Glu Leu Trp Glu
139             100                 105                 110
141 Leu Ala Glu Gln Lys Gly Lys Val Leu His Glu Glu His Val Glu Leu
142         115                 120                 125
144 Leu Met Glu Glu Phe Ala Phe Leu Lys Lys Glu Val Val Gly Lys Asp
145     130                 135                 140
147 Leu Leu Lys Gly Ser Leu Leu Phe Thr Ala Gly Pro Leu Glu Glu Glu
148 145                 150                 155                 160
150 Arg Phe Gly Phe Pro Ala Phe Ser Gly Ile Ser Arg Leu Thr Trp Leu
151                 165                 170                 175
153 Val Ser Leu Phe Gly Glu Leu Ser Leu Val Ser Ala Thr Leu Glu Glu
154             180                 185                 190
156 Arg Lys Glu Asp Gln Tyr Met Lys Met Thr Val Cys Leu Glu Thr Glu
157         195                 200                 205
159 Lys Lys Ser Pro Leu Ser Trp Ile Glu Glu Lys Gly Pro Gly Leu Lys
160     210                 215                 220
162 Arg Asn Arg Tyr Leu Ser Phe His Phe Lys Ser Gly Ser Leu Glu Asn
163 225                 230                 235                 240
165 Val Pro Asn Val Gly Val Asn Lys Asn Ile Phe Leu Lys Asp Gln Asn
166                 245                 250                 255
168 Ile Phe Val Gln Lys Leu Leu Gly Gln Phe Ser Glu Lys Glu Leu Ala
169             260                 265                 270
171 Ala Glu Lys Lys Arg Ile Leu His Cys Leu Gly Leu Ala Glu Glu Ile
172         275                 280                 285
174 Gln Lys Tyr Cys Cys Ser Arg Lys
175     290                 295
178 <210> SEQ ID NO: 4
179 <211> LENGTH: 295
180 <212> TYPE: PRT
181 <213> ORGANISM: Rattus norvegicus
183 <400> SEQUENCE: 4
184 Met Asp Ala Glu Pro Lys Arg Lys Phe Gly Val Val Val Val Gly Val
185   1               5                  10                  15
187 Gly Arg Ala Gly Ser Val Arg Leu Arg Asp Leu Lys Asp Pro Arg Ser
188              20                  25                  30
190 Ala Ala Phe Leu Asn Leu Ile Gly Phe Val Ser Arg Arg Glu Leu Gly
191          35                  40                  45
193 Ser Leu Asp Glu Val Arg Gln Ile Ser Leu Glu Asp Ala Leu Arg Ser
194      50                  55                  60
196 Gln Glu Ile Asp Val Ala Tyr Ile Cys Ser Glu Ser Ser Ser His Glu
197  65                  70                  75                  80
199 Asp Tyr Ile Arg Gln Phe Leu Gln Ala Gly Lys His Val Leu Val Glu
200                  85                  90                  95
202 Tyr Pro Met Thr Leu Ser Phe Ala Ala Ala Gln Glu Leu Trp Glu Leu
203             100                 105                 110
205 Ala Ala Gln Lys Gly Arg Val Leu His Glu Glu His Val Glu Leu Leu
206         115                 120                 125
208 Met Glu Glu Phe Glu Phe Leu Arg Arg Glu Val Leu Gly Lys Glu Leu
209     130                 135                 140
```

RAW SEQUENCE LISTING DATE: 07/12/2000
PATENT APPLICATION: US/09/606,129 TIME: 10:58:14

Input Set : A:\U607921.app
Output Set: N:\CRF3\07122000\I606129.raw

```
211 Leu Lys Gly Ser Leu Arg Phe Thr Ala Ser Pro Leu Glu Glu Glu Arg
212 145                 150                 155                 160
214 Phe Gly Phe Pro Ala Phe Ser Gly Ile Ser Arg Leu Thr Trp Leu Val
215                 165                 170                 175
217 Ser Leu Phe Gly Glu Leu Ser Leu Ile Ser Ala Thr Leu Glu Glu Arg
218             180                 185                 190
220 Lys Glu Asp Gln Tyr Met Lys Met Thr Val Gln Leu Glu Thr Gln Asn
221         195                 200                 205
223 Lys Gly Leu Leu Ser Trp Ile Glu Glu Lys Gly Pro Gly Leu Lys Arg
224     210                 215                 220
226 Asn Arg Tyr Val Asn Phe Gln Phe Thr Ser Gly Ser Leu Glu Glu Val
227 225                 230                 235                 240
229 Pro Ser Val Gly Val Asn Lys Asn Ile Phe Leu Lys Asp Gln Asp Ile
230                 245                 250                 255
232 Phe Val Gln Lys Leu Leu Asp Gln Val Ser Ala Glu Asp Leu Ala Ala
233             260                 265                 270
235 Glu Lys Lys Arg Ile Met His Cys Leu Gly Leu Ala Ser Asp Ile Gln
236         275                 280                 285
238 Lys Leu Cys His Gln Lys Lys
239     290                 295
242 <210> SEQ ID NO: 5
243 <211> LENGTH: 1081
244 <212> TYPE: DNA
245 <213> ORGANISM: Rattus norvegicus
247 <400> SEQUENCE: 5
248 ggtcaacagc taagtgaagc catatccata gagagtttgt gccagtgccc caagatcctg 60
249 aacctctgtc tgtcttcgga cactgactga agagaccgag atggatgccg agccaaagag 120
250 gaaatttgga gtggtagtgg ttggtgttgg cagagctggc tcggtgaggc tgagggactt 180
251 gaaggatcca cgctctgcag cattcctgaa cctgattgga tttgtgtcca gacgagagct 240
252 tgggagcctt gatgaagtac ggcagatttc tttggaagat gctctccgaa gccaagagat 300
253 tgatgtcgcc tatatttgca gtgagagttc cagccatgaa gactatatac ggcagtttct 360
254 gcaggctggc aagcatgtcc tcgtggaata ccccatgaca ctgtcatttg cggcggccca 420
255 ggagctgtgg gagctggccg cacagaaagg gagagtcctg catgaggagc acgtggaact 480
256 cttgatggag gaattcgaat tcctgagaag agaagtgttg gggaaagagc tactgaaagg 540
257 gtctcttcgc ttcacagcta gcccactgga agaagagaga tttggcttcc ctgcgttcag 600
258 cggcatttct cgcctgacct ggctggtctc cctcttcggg gagctttctc ttatttctgc 660
259 caccttggaa gagcgaaaag aggatcagta tatgaaaatg accgtgcagc tggagaccca 720
260 gaacaagggt ctgctgtcat ggattgaaga gaaagggcct ggcttaaaaa gaaacagata 780
261 tgtaaacttc cagttcactt ctgggtccct ggaggaagtg ccaagtgtag gggtcaataa 840
262 gaacattttc ctgaaagatc aggatatatt tgttcagaag ctcttagacc aggtctctgc 900
263 agaggacctg gctgctgagg aggaagcgcat catgcattgc ctggggctgg ccagcgacat 960
264 ccagaagctt tgccaccaga agaagtgaag aggaagcttc agagacttct gaaggggcc 1020
265 agggtttggt cctatcaacc attcaccttt agctcttaca attaaacatg tcagataaac 1080
266 a                                                               1081
269 <210> SEQ ID NO: 6
270 <211> LENGTH: 6
271 <212> TYPE: PRT
272 <213> ORGANISM: Artificial Sequence
274 <220> FEATURE:
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RAW SEQUENCE LISTING DATE: 07/12/2000
PATENT APPLICATION: US/09/606,129 TIME: 10:58:14

Input Set : A:\U607921.app
Output Set: N:\CRF3\07122000\I606129.raw

<223> OTHER INFORMATION: Description of Artificial Sequence: hydrophobic domain of BVR
<220> FEATURE:
<221> NAME/KEY: PEPTIDE
<222> LOCATION: (2)
<223> OTHER INFORMATION: where X is any aa
<400> SEQUENCE: 6
Phe Xaa Val Val Val Val
1 5

<210> SEQ ID NO: 7
<211> LENGTH: 6
<212> TYPE: PRT
<213> ORGANISM: Artificial Sequence
<220> FEATURE:
<223> OTHER INFORMATION: Description of Artificial Sequence: nucleotide binding domain of BVR
<220> FEATURE:
<221> NAME/KEY: PEPTIDE
<222> LOCATION: (2)
<223> OTHER INFORMATION: where X is any aa
<400> SEQUENCE: 7
Gly Xaa Gly Xaa Xaa Gly
1 5

<210> SEQ ID NO: 8
<211> LENGTH: 8
<212> TYPE: PRT
<213> ORGANISM: Artificial Sequence
<220> FEATURE:
<223> OTHER INFORMATION: Description of Artificial Sequence: oxidoreductase domain of BVR
<400> SEQUENCE: 8
Ala Gly Leu His Val Leu Val Glu
1 5

<210> SEQ ID NO: 9
<211> LENGTH: 29
<212> TYPE: PRT
<213> ORGANISM: Artificial Sequence
<220> FEATURE:
<223> OTHER INFORMATION: Description of Artificial Sequence: leucine zipper of BVR
<220> FEATURE:
<221> NAME/KEY: PEPTIDE
<222> LOCATION: (2)
<223> OTHER INFORMATION: where X is any aa
<400> SEQUENCE: 9
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1 5 10 15
W--> Xaa Xaa Xaa Xaa Xaa Leu Xaa Xaa Xaa Xaa Xaa Xaa Leu
20 25

← what about Xaa's at locations 3-7, 9-14, 16-21, 23-28?

FYI

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

VERIFICATION SUMMARY DATE: 07/12/2000
PATENT APPLICATION: US/09/606,129 TIME: 10:58:15

Input Set : A:\U607921.app
Output Set: N:\CRF3\07122000\I606129.raw

L:11 M:270 C: Current Application Number differs, Replaced Application Number
L:12 M:271 C: Current Filing Date differs, Replaced Current Filing Date
L:284 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:303 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:7
L:336 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9
L:339 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9
L:386 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:12
L:433 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:15
L:452 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:16
L:471 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:17